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Running Head

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Abstract

The multi-specialty approach to managing patients with cerebrospinal fluid (CSF) disorders requires neurology, neurosurgery, neuroradiology and neuro-ophthalmology. The annual United Kingdom CSF disorders meeting presented the first guidelines for Idiopathic Intracranial Hypertension focusing on protecting the vision; managing the underlying disease and reducing headache morbidity. The most recent scientific concepts in CSF disorders were presented, as was the applied understanding of shunt and valve technology.

The United Kingdom Cerebrospinal Fluid (CSF) symposium is an annual multi-disciplinary event aimed at all members of the multi-disciplinary team, attendees included specialists in neurosurgery, neurology, neuroradiology and neuro-ophthalmology. The symposium was designed by Miss Susan Mollan, Consultant Neuro-ophthalmologist at University Hospitals Birmingham and Dr Alexandra Sinclair, National Institute for Health Research (NIHR) Clinician Scientist, Institute of Metabolism and Systems Research at University of Birmingham and co-organised by Miss Jessica Walker, Medical Student at the University of Birmingham.

The 2018 symposium aims were:

- Facilitating discussion within the multi-specialty team regarding the more challenging and controversial issues in managing CSF disorders.
- To provide a synopsis of the latest scientific and clinical trial research.
- Launch of the Idiopathic Intracranial Hypertension Consensus Guidelines. [1]

Speed science section

At the speed science section, the latest work of basic scientists and clinicians was presented. Miss Jessica Katanga, a medical student supervised by Dr Arani Nitkunan at St George's and Croydon Hospitals, was the winner of this section for presenting an audit of the management of Idiopathic Intracranial Hypertension (IIH) in the context of the new consensus guidelines.[1] In the consecutive retrospective audit they showed that implementation of neuroimaging and lumbar puncture was high but improvement was needed in routine measurement of body mass index (BMI) and documentation of teratogenicity and side effects of medications prescribed for IIH or headache. Venography

performed within 24 hours was achieved in just over half of patients this was echoed in the audience discussion as the availability of venography within 24hours around the UK is challenging. The neuroradiology experts explained that this standard was set not based on current practice but what should be a “gold standard of care for papilloedema patients, as the detection of a venous sinus thrombosis would change management; additionally, it would be more cost effective to undergo the MRI and MRV at the same time rather than separately.

Dr Nicola Adderley from the Institute of Applied Health Sciences presented a case control study investigating the risk of cardiovascular disease in women with IIH. Her results showed that there was twice the risk of composite cardiovascular events independent of BMI, suggesting cardiovascular risk in IIH may not exclusively be driven by obesity. A PhD student at the Open University, Ester Pascual-Baixauil, presented the effect the high fat diet on CSF secretion in an animal model. There was a positive correlation between a high percentage of body fat and CSF secretion and between CSF secretion and testosterone levels. Dr Anna Anthonypillai, a foundation doctor at St Thomas’ Hospital audited the cases of Pseudotumour Cerebri (PTC) Syndrome secondary to anaemia. Of 98 patients seen at one unit with PTC, only 10 had anaemia (Hb<11g/dl) and 4 had anaemia without precipitous weight gain or other causal factors for PTC. Treating these 4 patients with iron supplementation led to a reduction in papilloedema. The final speed science presentation was by Linda D’Antona from University College London examining the role of spontaneous venous pulsation as a non-invasive measure of intracranial pressure (ICP) using the infrared video feature on the optical coherence tomography spectralis.

Latest in trials for CSF disorders

Dr Keira Markey presenting the results of the IIH:DT, a phase II randomised control trial (RCT) assessing the safety, tolerability and efficacy of an 11B-hydroxysteroid dehydrogenase type 1 inhibitor, AZD4017, in IIH. This is the first trial of a novel therapy for IIH. AZD4017 was safe and tolerated over 12 weeks. In vivo efficacy was demonstrated in urinary, hepatic and cerebrospinal fluid biomarkers. Possible clinical benefits were noted, but a further phase III clinical trial would be required to demonstrate efficacy.

Mr Conor Mallucci, Consultant Neurosurgeon, Alder Hey Hospital, Liverpool gave an over view of The British Antibiotic and Silver Impregnated Catheters for ventriculoperitoneal Shunts, "the BASICs trial". This multi-centre RCT funded by the National Institute for Health Research HTA programme randomised 1605 patients to standard ventriculoperitoneal shunts (VPS), antibiotic impregnated VPS and silver impregnated VPS with a primary outcome of time to VPS infection following insertion of first de novo VPS. The results of the BASICs trial will have clinical impact for all CSF disorders requiring a VPS.

IIH Consensus Guidelines

There was a series of three presentations regarding the guidelines.[1] Miss Susan Mollan, Consultant Neuro-ophthalmologist at University Hospitals Birmingham, presenting the process of engagement of the key stakeholders including the patient and patient charity, IIH UK, the Society of British Neurological Surgeons, the Association of British Neurologists and the Royal College of Ophthalmologists and key international leaders in the field. The aim of the guidance was to equip healthcare professionals to correctly diagnose and optimally manage those with IIH within the context of the published literature, and where evidence did not exist by Delphi rounds of UK specialists in neurology, neurosurgery and

ophthalmology. The importance of primarily protecting vision was highlighted, as was the flow diagrams of the consensus guidance infogram.[2]

Mr Ahmed Toma, Consultant Neurosurgeon, Queen's Square, London presented the neurosurgical approach to IIH. He educated on how shunts had evolved within the management for IIH. Looking at the recent evidence, Mr Toma posed that shunts were not the solution, but a temporising measure, due to surgical complications and revision rates. He underlined that CSF diversion in IIH was to protect vision within the context of acute visual deterioration, and exceptionally for headache. The resulting discussion included comments from colleagues, both in the UK and Denmark, about the utility of optic nerve sheath fenestration as an alternative.

Focusing on the management of headache in IIH was Dr Brendan Davies, Consultant Neurologist, University Hospital North Midlands. Managing the headache morbidity in the IIH patient group has been shown to improve quality of life. Headaches in IIH typically have a migrainous phenotype, and this was helpful for recommending acute and preventative therapies. He highlighted that medication-overuse headache was important to deal with.

Key Note Lecture

Mr Christoph Miethke from Miethke GmbH & Co. KG, Potsdam, Germany, gave a detailed lecture described the physics and mechanisms behind shunts and valve technology. Demonstrating his points with videos he explained the pressure in a straw, he evolved this example to allow the audience to understand pressures in open and closed systems and then described some of the more intricate details underlying valve technology in an accessible way for the audience.

From the multi-disciplinary team

Mr George Tsermoulas, Consultant Neurosurgeon from University Hospital Birmingham presented on the clinical utility of CSF infusion studies for Normal Pressure Hydrocephalus (NPH) and possibly shunt malfunction. He emphasised the importance of diagnosing NPH as a reversible cause of disability.

Dr Abd Tahrani, NIHR Clinician Scientist from the University of Birmingham presented a thought-provoking lecture explaining obesity should be classed as a complex relapsing disease which is typically poorly managed and leads to multi-system complications. He explained the hormone and energy changes which makes maintaining weight loss difficult. He presented the current trends in use of bariatric surgery and medical therapies needed to prevent regain of weight. One key message was society's attitude to obesity and he shared a powerful radio-interview exampling the discrimination faced by those with obesity and appealed to all health care professionals in the room to recognise obesity stigma and ensure it did not interfere with clinical practice.

References

1. Mollan SP, Davies B, Silver NC, Shaw S, Mallucci CL, Wakerley BR, et al. Idiopathic intracranial hypertension: consensus guidelines on management. J Neurol Neurosurg Psychiatry [Internet]. 2018 Oct [cited 2018 Nov 2];89(10):1088–100.

2 Mollan SP, Hornby C, Mitchell J, Sinclair AJ. Evaluation and Management of adult idiopathic intracranial hypertension. Pract Neurol 2018 Aug 28. pii: practneurol-2018-002009.

Figures

1. Jessica Katanga, receiving the award for ‘best presentation in the speed science symposium,’ from Miss Susan Mollan

2. IIHUK.

3. The keynote lecture was presented by